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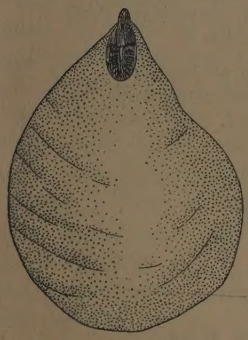
Two Common Scale-Insects of the Orchard.

The Scurfy Bark-Louse. The Oyster-Shell Bark-Louse.



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TWO COMMON SCALE-INSECTS OF THE ORCHARD.

The Scurfy Bark-Louse *Chionaspis furfurus* Fitch.

The Oyster-Shell Bark-Louse *Mytilaspis pomorum* Bouché.

By W. E. Britton, *State Entomologist.*

Long before Connecticut orchards were attacked by the San José or pernicious scale-insect, the scurfy bark-louse and the oyster-shell bark-louse were present as parasites upon the trees and caused considerable damage each year. These orchard enemies still injure trees, though their work has been somewhat overshadowed by the damage of the San José scale during the last few years. The two kinds of scale-insects described in this publication are frequently received at the Station and the correspondent usually asks if it is the San José scale. This bulletin has been prepared for the purpose of distributing information about these two common species and the remedies for them, as well as to point out wherein they differ in appearance from the San José scale. The San José scale-insect has three or four broods each year, is circular in outline, and is shown in figure 1. The oyster-shell and scurfy bark-lice are much larger, elongated or pear-shaped, and single brooded. See figures 2 and 4.

The life histories of the species forming the subject of this bulletin are so nearly alike that the same remedial treatment answers for both.

The terms "scale" and 'bark-louse" are both applied to insects of this group (*Coccidæ*) and may be considered as synonymous with the compound word "scale-insect."

The Scurfy Bark-Louse.

The scurfy bark-louse is a native of North America, and was formerly called "Harris' Bark-Louse." It is now found throughout the United States, and, according to Howard, is being succeeded by the oyster-shell bark-louse.*

The female scale is about 3 mm. (⅛ inch) in length, broadly pear-shaped, with the cast larval skin at the smaller

* Year-book, 1894, U. S. Department of Agriculture, p. 259, Washington, D. C.

end which usually points upward. The color is light grey or white. The male scale is much smaller than the female, pure white, with three parallel ridges along the back, and parallel sides. Males and females usually occur on separate twigs. Both sexes are shown in figure 2.

There is only one generation each year in Connecticut. The eggs hatch during the latter part of May. Our records show

FIG. 1.—San José scale on peach twig: a. mature females: b. young females: c. immature males. About twice natural size.

that on May 19th, 1902, material was brought to the Station from North Guilford, and that some of the eggs had hatched. The writer has made observations on this point for several years and usually the eggs hatch here between May 20th and June 1st.

The newly-hatched insect (see figure 3, c) crawls about for a short time, then becomes fixed, forms a shell and sucks the sap from the tree. The female becomes mature during September, and later dies and shrivels up, leaving the old shell filled with oval, purple eggs. Usually between thirty and fifty eggs are produced by each female. In Connecticut the writer found the eggs as early as October 1st in 1900, while they had not been formed on October 9th, 1901. Usually they are formed during the first week in October. Howard states that in the vicinity of Washington the eggs are formed October 15th and hatch uniformly about the middle of May.* There is probably more than one brood in the Southern States.

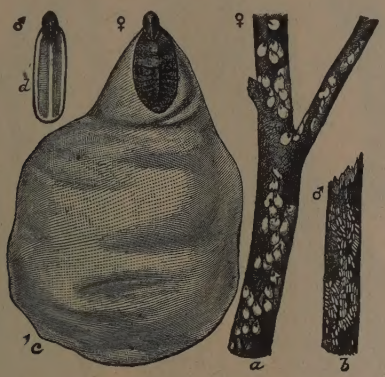

FIG. 2.—Scurfy bark-louse: a. c. females: b. d. males. a. b. natural size: c. d. much enlarged. (After Howard, Year-book of U. S. Department of Agriculture for 1894.)

The chief injury caused by this species occurs to young pear and apple trees either in nursery rows or in newly-set orchards. Sometimes the bark of the trunk and branches is entirely covered by the grey shells, thus giving the tree the appearance of having been whitewashed. Such trees make little growth and are frequently killed outright. Seldom do we find the insect abundant on large trees. Currant bushes are often infested and mountain ash and hawthorn are frequently attacked by the scurfy bark-louse. The appearance of an infested currant twig is shown on Plate I.

* *Loc. cit.*

The Oyster-Shell Bark-Louse.

This insect is well known and occurs all over the world. Europe is thought to be its original home, but it has been known to be present in the United States for over one hundred years. It is more common at the North, where it is single-brooded, than in the South, where two generations occur each year.

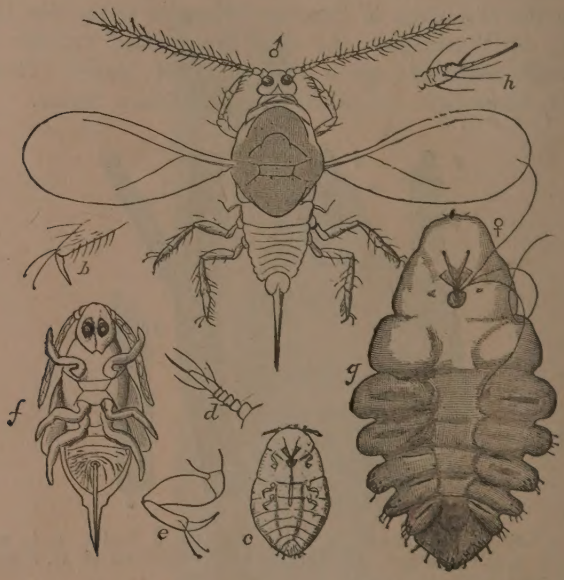

FIG. 3.—Scurfy bark-louse: adult male above: b. foot: h. tip of antenna: c. larva: d. antenna of larva: e. leg of larva: f. pupa: g. adult female with armor removed. All greatly enlarged. (After Howard, Year-book of U. S. Department of Agriculture for 1894.)

The armor of the female (shown in figure 4) is about 3 mm. (⅛ inch) long, narrow and usually somewhat curved, and nearly the same color as the bark upon which it is found. The cast larval skin may be seen at the pointed end. Generally it is darker in color than the scurfy bark-louse, as well as narrower. The armor of the male is much smaller and less curved than that of the female. The male scales are seldom seen upon fruit trees. The adult male (shown in figure 5) is provided with

a pair of wings, legs, antennæ and eyes, and resembles the male of the scurfy bark-louse.

The oyster-shell bark-louse, like the scurfy bark-louse, passes the winter in the egg stage and the small, oval, white or pale yellow eggs hatch about the first of June or a few days later than the eggs of the scurfy bark-louse. The young were crawling on twigs received at the Station June 9th, 1902. As many as one hundred eggs are sometimes laid by a single female.

FIG. 4.—Oyster-shell bark-louse: a. female scale from below showing eggs; b. dorsal view of same: d. male scale—all enlarged: c. females, e. males—natural size on twigs. (After Howard, Year-book of U. S. Department of Agriculture for 1894.)

No observations have been made by the writer regarding the time when the eggs are laid in the fall, but eggs were formed in specimens collected in December. According to Smith the eggs are formed late in August and during September.*

The oyster-shell bark-louse is found on nearly every old apple tree in Connecticut, and may occur on the small twigs

* Bull. 140, New Jersey Exp. Station, p. 5.

and on the large branches and trunk in the crevices of the rough bark. It weakens trees unquestionably, but the writer has never seen fruit trees killed by the oyster-shell bark-louse in Connecticut. Many seedlings and sprouts of native trees in fields and woods are killed each year by it. Ash, poplar, willow, birch, butternut, black-walnut and maple are the trees most commonly injured, and are frequently infested to such an extent that no portion of the bark can be seen.

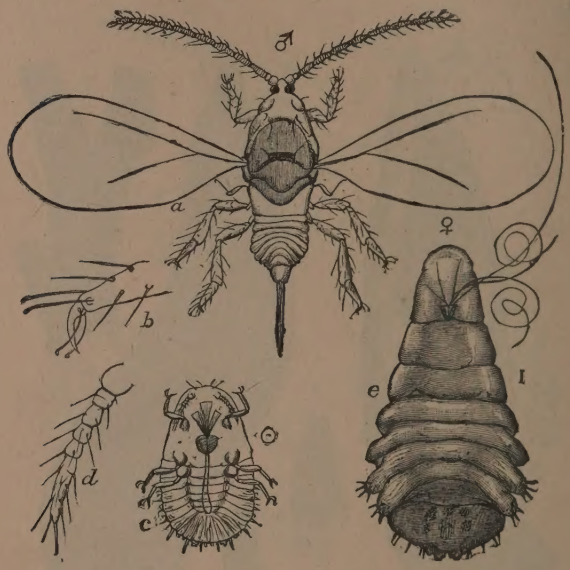

FIG. 5.—Oyster-shell bark-louse: a. adult male: b. foot: c. larva; d. antenna of larva: e. adult female with armor removed. All greatly enlarged. (After Howard, Year-book of U. S. Department of Agriculture for 1894.)

In nurseries and ornamental plantations lilac, Kilmarnock willow and some species of *Elæagnus* are often seriously infested.

The appearance of twigs and branches infested by the oyster-shell bark-louse is shown on Plate II.

REMEDIES.

The eggs of both the scurfy and the oyster-shell bark-lice are hard to kill, so that winter applications are not effective in

fighting the species. Some writers advise a winter application of whitewash to destroy them: this frequently causes the shells to fall from the bark and the eggs are scattered, and perhaps to such an extent that the young are not able to reach the tree. But many eggs remain on the tree and are not injured by the whitewash. Frequently these eggs withstand applications of kerosene and crude oil. The most vulnerable point in the life history of both species is just after the eggs hatch, while the young are crawling and before they have become protected by the formation of their shells or armor. In Connecticut this period occurs during the first half of June, and the newly-hatched insects may be destroyed readily by spraying with any of the common contact insecticides. Common soap and water (1 lb. dissolved in 8 gallons) is as convenient as any application and is cheap and effective. Any laundry soap will answer. It should be cut in thin slices, dissolved in boiling water and diluted to make the proper proportions. Whale-oil soap in the same proportions can also be used. Kerosene emulsion is recommended, and a mechanical mixture of kerosene and water, containing from 10 to 15 per cent. of kerosene, applied with a "Kerowater" pump is also a cheap and satisfactory remedy.

Summary.

1. The scurfy bark-louse and the oyster-shell bark-louse have commonly injured fruit trees for many years in Connecticut by sucking out the sap and are often mistaken for the San José scale-insect, which, on account of a different life-history, must receive different treatment.

2. The scurfy bark-louse is a native of North America and is well distributed over the United States. The female is light grey and pear-shaped, while the male is much smaller, white with parallel sides. There is one brood each year at the North. It winters in the egg stage and the eggs hatch during the latter part of May. Eggs for the next brood are laid the first week in October. Small apple and pear trees and currant bushes are the most seriously infested and are sometimes killed.

3. The oyster-shell bark-louse is found all over the world, and was probably introduced into this country from Europe more than a hundred years ago. It is darker in color and

narrower than the scurfy bark-louse; the life history is very similar, but the eggs are a few days later in hatching, and are formed earlier in the fall. There is one brood each year. It infests apple, but is common on ash, poplar, willow, butternut and lilac, often killing them.

4. Spraying the trees during the first two weeks in June, or while the young are crawling, with soap and water (1 lb. in 8 gals.) or with kerosene emulsion will readily destroy the newly-hatched larvæ.

SCURFY BARK-LOUSE *Chionaspis furfurus* Fitch.
Females on currant. Natural size.

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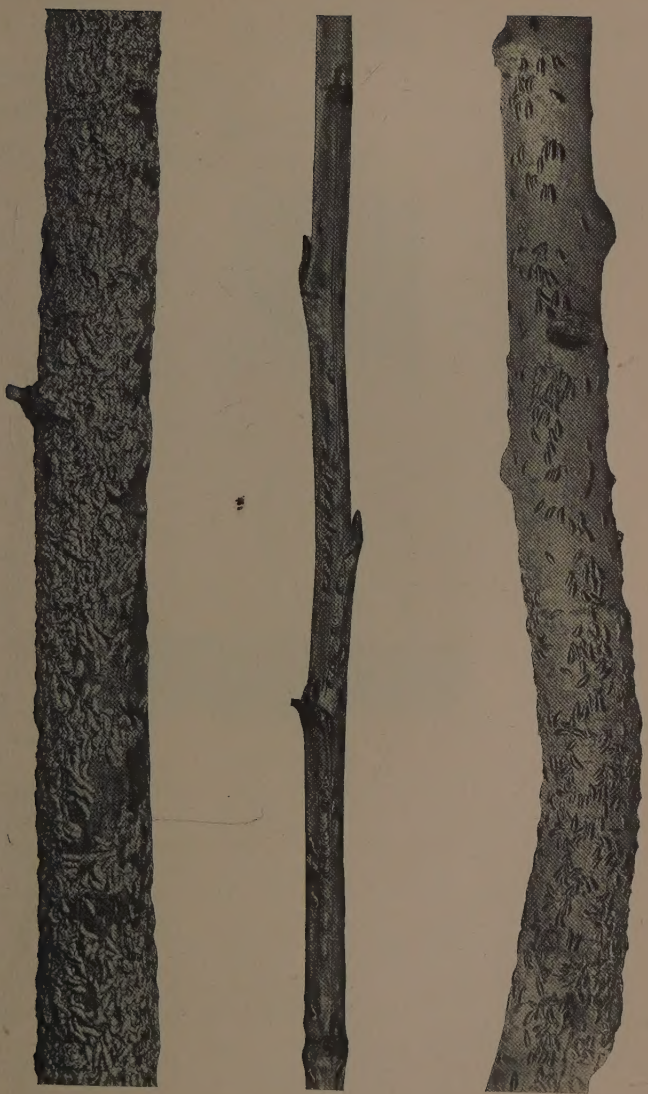

OYSTER-SHELL BARK-LOUSE *Mytilaspis pomorum* Bouché.
Females on poplar. Natural size.

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